

the period of greatest intensity of the Aleutian low. Moderate to fresh gales occurred in the Gulf of Alaska on several days—at the head of the gulf on the 8th, 10th, 11th, 17th, and 18th, as observed by the American S. S. *Northwestern*; and over the south-central and eastern portions on the 1st, 8th, and 22d. The Aleutian off-shooting low which caused the gales on the 8th passed into the Canadian Northwest on the 9th.

Northwest gales occurred near the coast of California on the 5th and 6th, and rising as they did to a force of 10, as noted by the American S. S. *H. F. Alexander*, constituted the strongest winds of the month outside of the Tropics. Moderate northeast gales also occurred near the same coast on the 21st, and farther at sea on the San Francisco-Hawaii route on the 20th and 22d.

INDIAN AND SOUTH PACIFIC OCEANS

By ALBERT J. McCURDY, JR.

Arabian Sea.—Weather reports received from vessels that crossed the Arabian Sea during July indicate a moderate activity of the southwest monsoon in that month. The average wind force was 5, and moderate to fresh gales were experienced on somewhat more than one-fourth of the days.

The Dutch S. S. *Menado*, Capt. R. Borst, Suez to Colombo via Djibouti, encountered on the 6th a moderate southwesterly gale accompanied by high seas. Mr. W. J. Klijn, observer, reports that the lowest pressure observed was 29.66 inches (uncorrected), occurring at 3:40 p. m., in 12° 37' N., 55° E. The wind at this time was SW. by S., force 7, and decreased by 10 p. m. to a fresh SW. breeze.

On the same date the British S. S. *Suncliff*, Capt. H. J. Case, Colombo to Port Sudan, encountered a southwesterly gale in 5° 51' N., 52° 28' E. Mr. A. Horey, third officer, states that the lowest barometer, 29.83 inches, was recorded about 3 p. m. on the 6th. The wind at this time was SW., force 7, thence increased to a fresh gale on the following day, accompanied by high confused seas that lasted until 1 a. m. of the 8th.

From the 15th to 18th the British S. S. *Slavic Prince*, Capt. C. W. Chambers, Penang to Aden, experienced southwesterly winds of force 7 to 8, accompanied by very heavy seas. Mr. W. C. Freeman, second officer, states that the lowest barometer recorded was 29.64 inches (uncorrected), occurring at 3:45 p. m., on the 18th, in 12° 54' N., 57° 15' E.

On the 23d the Dutch S. S. *Kawi*, Capt. E. P. Ross, Sabang to Perim, experienced a southwesterly gale south of Sokotra, reporting conditions similar to those experienced by the *Slavic Prince*. The lowest pressure was 29.73 inches (uncorrected), occurring at 4 p. m., on the 23d in 10° 30' N., 51° 22' E. At this time the wind was SW., force 7, gradually shifting toward the south.

South Pacific Ocean.—The only gale of any consequence reported in the South Pacific for this month was a disturbance in the vicinity of New Zealand that appeared on July 21, and which until the 26th occasioned moderate to strong gales with accompanying high seas. The British S. S. *Orowaiti*, Capt. W. H. Smith, Wellington to San Luis Obispo, came within its influence on the 21st. The observer, Mr. C. R. Smith, is quoted as follows:

Gale commenced in early morning of the 21st and increased till midnight. Wind shifted from S. to SW., after rounding Cape Palliser. Wind just blew itself out.

23d–25th. The worst and heaviest wind and sea were experienced between 4 and 8 a. m., on the 25th, which was sometime after lowest barometer. There were no sudden changes of wind.

The lowest barometer recorded was 29.52 inches, occurring at 4 p. m. on the 24th, in 29° S., 172° 51' W. The wind at this time was northerly, force 9. The gale lasted throughout the evening of the 25th, and during that time the wind shifted to the SW.

From the 24 to 26th this same gale was experienced by the British S. S. *Maunganui*, Capt. L. C. H. Worsall, Wellington to Rarotonga. Mr. W. Johnson, observer, reports that the lowest barometer noted was 29.47 inches (uncorrected), occurring at 2 p. m. on the 24th, in 31° 31' S., 171° 40' W. The wind at this time was SE., force 8, later shifting to NW., thence to W. by S., force 8, with a steadily rising barometer.

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DETAILS OF THE WEATHER IN THE UNITED STATES

GENERAL CONDITIONS

By ALFRED J. HENRY

Anticyclones (HIGHS) that drifted slowly across the continent toward the southeast appeared to dominate the weather of the month in the great majority of districts. As a whole, the month was cool and dry, although areas in Florida, the lower Mississippi Valley, and the northern Rocky Mountain Plateau had above-normal temperature. The rainfall was irregularly distributed; more than the normal fell along the Atlantic coast south of the Virginia capes, also locally in the Lake region and the middle Mississippi Valley. In general, however, the rainfall in the great majority of localities was below the normal, the shortage being especially noticeable in the lower Mississippi Valley and the western Gulf States. The usual details follow:

CYCLONES AND ANTICYCLONES

By W. P. DAY

The general movement of the centers of cyclones during the month of July was eastward across the northern United States, and Canada (within the limits of observation).

However, the low-pressure systems crossing the field of observations were mostly of the trough formation and sometimes without the usual accompanying cyclonic circulation. The weather over the Southern States was entirely dependent on the day-to-day displacements of these troughs or lines of discontinuity.

The anticyclones, on the other hand, were generally more prominent and retained their identities over considerable periods, notably the Alberta HIGHS which were on the weather chart at the beginning and at the end of the month.

FREE-AIR SUMMARY

By V. E. JAKL, Meteorologist

The average free-air conditions for the month, as determined by kites and given in Tables 1 and 2, showed, with no important exceptions, close agreement with the normal for all sections of the country represented by the six fully equipped aerological stations. The most noticeable departure is in temperature, in which respect the month was generally slightly cooler than normal, although the departures were not of a decided nature ex-